



2011

Pre-Design Scoping Study

Data
Needs
Analysis



KY 1554, Daviess County
Item No. 2-8632.00

Construct a new section of KY 1554
from Audubon Parkway to KY 56

Prepared by the KYTC
Division of Planning and
KYTC District 2

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I. INTRODUCTION

This study is a Data Needs Analysis (DNA) of a roadway project for the KY 1554 corridor in Daviess County, Item Number 2-8632.00.

A. Study Purpose

The purpose of the DNA is to address the nine elements of Purpose and Need as defined by NEPA in order to develop a draft Purpose and Need Statement for the project. This study will also provide a more defined project scope, possible alternatives, planning-level cost estimates, an identification of potential environmental impacts, and other information that will be of assistance in future phases of the development of this project.

B. Location

This project is located on KY 1554 with project limits extending from KY 56 at Sorgho (MP 0.000) to Curdsville-Delaware Road near the Audubon Parkway Interchange (MP 0.648). See **Figure 1** and Exhibit 1 in **Appendix A**. A topographic map of the study area, Exhibit 2, can also be viewed in **Appendix A**.



Figure 1: Project Location Map

II. PROJECT PURPOSE AND NEED

A. Legislation

This project was entered into the Highway Plan in 2010. According to the plan, there is \$660,000 in state bond (SB2) funds allocated for the design phase. There are currently no other phases listed in the Highway Plan. The following is a description of the project as it is listed in the 2010 General Assembly's Enacted Highway Plan.

- **Item #2-8632.00, Daviess County**

<u>Phase</u>	<u>Fund</u>	<u>Year</u>	<u>Estimate</u>
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D:	SB2	2012	\$660,000
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CONSTRUCT A NEW SECTION OF KY-1554 FROM AUDUBON PARKWAY TO KY-56
(10CCN)

Milepoints: From: 0 To: 0.648

Purpose and Need: RELIABILITY/ NEW ROUTE(O)

B. Project Status

Design funds in the amount of \$660,000 for this project have been authorized. The Highway Plan Design year is listed as 2012.

This project is on the inactive Unscheduled Needs List (UNL). The current Owensboro-Daviess County Transportation Improvement Program (TIP), does not list a project in this area.

C. System Linkage

The segment of KY 1554 within the limits of this project connects KY 56 in the community of Sorgho to the Audubon Parkway (See **Figure 2** and Exhibit 3 in **Appendix A**). The Audubon Parkway connects Owensboro and Henderson.

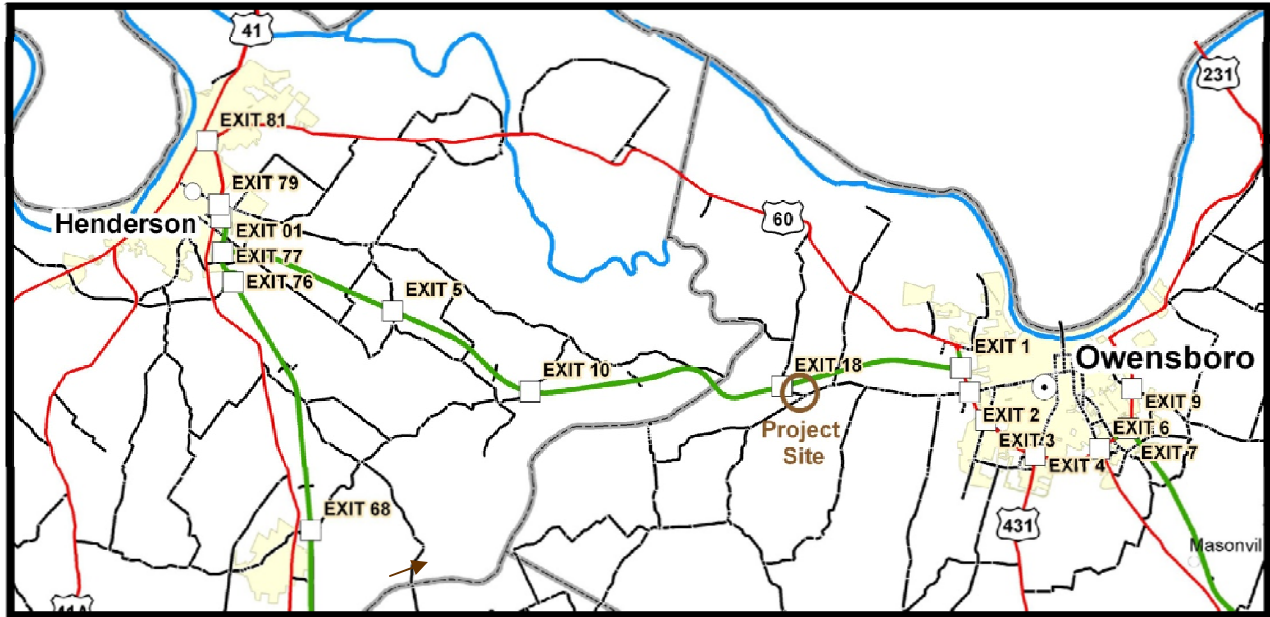


Figure 2: System Linkage Map

This segment of KY 1554 has the following roadway classifications:

- **Functional Classification** – Rural Minor Collector
- **State System** – Rural Secondary
- Not on the National Truck Network
- **Truck Weight Classification** – A
- Designated Bike Route – Ramblin' River Tour
- Access by permit

D. Modal Interrelationships

There is no public transit on this route. This route is part of the Ramblin' River Tour, a designated bike route.

E. Social Demands & Economic Development

There is no known future development that may affect this route. It is used primarily by residents in the Sorgho community and the surrounding area.

F. Transportation Demand

The last actual traffic count at the study area was an ADT of 1,200 in 2009. A forecast can be requested during Phase I Design if required. **Figure 3** displays historic traffic count data for KY 1554 from MP 0.000 to MP 0.648.

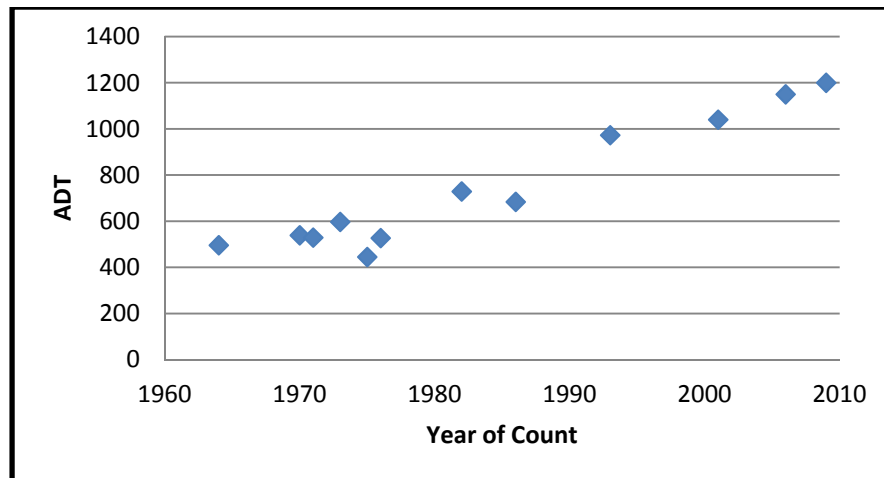


Figure 3: Historic Traffic Counts

G. Capacity

Given the recent traffic counts, the capacity of the existing roadway is not currently an issue. It also doesn't appear that capacity will be an issue in the near future.

H. Safety

A search for collisions in the most recent 3 year period only resulted in a couple of events; therefore, a longer analysis period was used. Collision data was obtained from the Kentucky State Police database for an **eleven** year period from January 1, 2000 to December 31, 2010 for the project limits of KY 1554 and the segments of Curdsville-Delaware Road and KY 56 at the intersections with KY 1554. On KY 1554, there were five reported collisions in the project area during this eleven year period. No night/day or weather pattern could be determined. There were 4 property damage only (PDO) collisions reported and one injury. No fatalities occurred on this segment of KY 1554 during the analysis period. There were no collisions reported on Curdsville-Delaware Road near the intersection with KY 1554. There were three collisions reported on KY 56 at the intersection with KY 1554. Two of these collisions were injury collisions and one was reported as property damage only (PDO). The location of the collisions and other details can be seen in **Figure 4**.

More detailed collision data can be viewed in **Appendix B**.

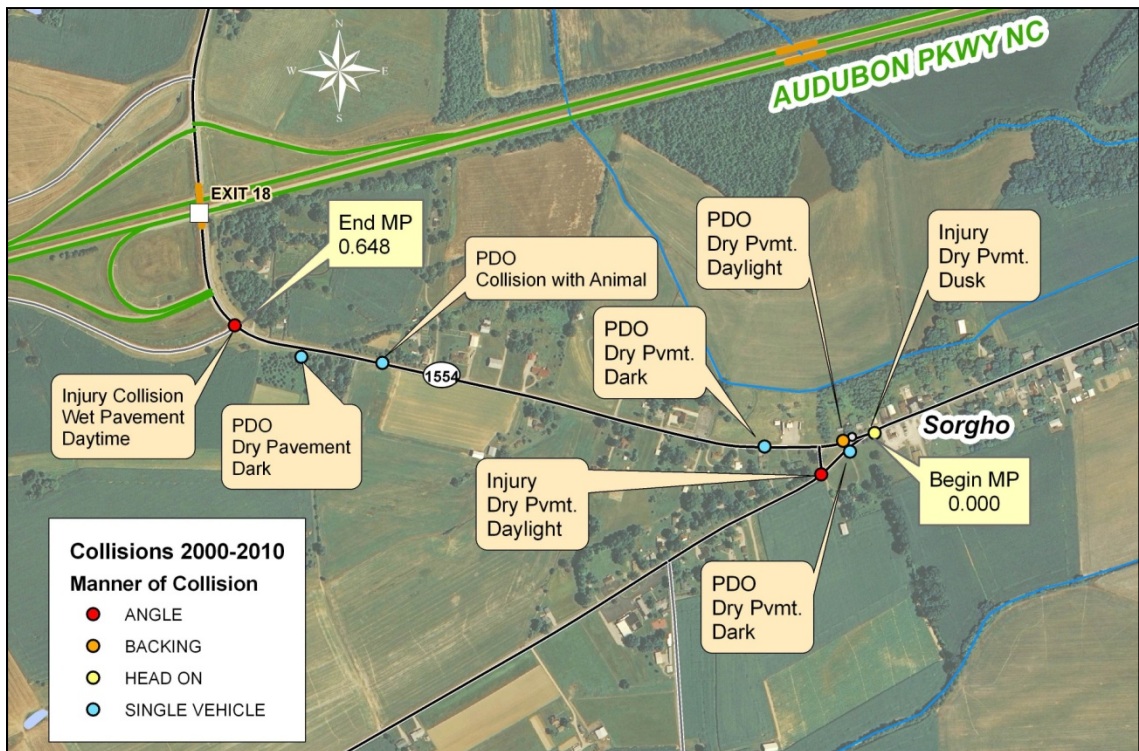


Figure 4: Collision Locations

I. Roadway Deficiencies

a. Mainline Geometrics

Most of the roadway currently has 9-ft lanes and 3-ft shoulders, with the exception of a small segment of KY 1554 at the end of the project near the Curdsville-Delaware Road which has 11-ft lanes and 6-ft shoulders. KYTC's Common Geometric Practices for Rural Collector Roads recommends 11-ft lanes and 5-ft shoulders for a 55 MPH Design Speed and a maximum grade of 7% for rolling terrain (see **Appendix C**). The only noticeable grade change occurs near the interchange with the Audubon Parkway. The curve at the end of the project near the interchange has a radius of approximately 490 feet which is less than the recommended minimum radius of 965 feet in the KYTC's Common Geometric Practices for Rural Arterials at a 55 MPH design speed. There are no bridges within the project limits. Existing roadway plans were not available for this segment of KY 1554. A summary of existing conditions can be viewed in *Table 1*. **Figure 5** displays a photo of the typical section.

Table 1: Existing Conditions and Data Summary

County:	<u>Daviess</u>		
Route Number(s):	<u>KY 1554</u>		
Item No.:	<u>02-8632.00</u>		
BMP:	<u>0.000</u>	EMP:	<u>0.648</u>
Project Length:	<u>0.648 miles</u>		
Rdwy. Class.:	<u>Rural Minor Collector</u>	State Class.:	<u>Rural</u> <u>Secondary</u>
Truck Class:	<u>A</u>		
ADT (current):	<u>1,220</u>		
Terrain:	<u>Rolling</u>	Access Control:	<u>By Permit</u>
Posted Speed:	<u>35-55 MPH</u>	Median Type:	<u>Undivided</u>
Funding Type:	<u>D-SB2</u>		

Roadway Data:

	<u>Existing Conditions</u>	<u>Design Criteria*</u>
No. of Lanes	2	2
Lane Width	9-11 ft	11 ft
Shoulder Width	3-6 ft	5 ft
Minimum Radius	490 ft	965 ft
Maximum Grade	Not Available	7%
		<i>* 55 MPH Design Speed</i>
Adequacy Rating %:	Not Available	



Figure 5: Photo of KY 1554 Cross-Section

b. Intersection

The intersection of KY 1554 and KY 56 at the end of the study area is at a skew angle. KY 1554 splits into two different directions at the intersection. See **Figure 6**. If a vehicle is traveling east on KY 1554, although there is a stop condition, it appears that KY 1554 continues on the same alignment at the intersection with KY 56 (see **Figures 6-7**).

There is also a leg of KY 1554 at the intersection that a driver must turn right onto before intersecting with KY 56. If a vehicle is traveling toward KY 56 on KY 1554 and needs to travel west on KY 56, or if it is traveling east on KY 56 and needs to turn onto KY 1554, this may be the only way the vehicle can make the turn. However, there is no signage to indicate to the driver the purpose of this segment of roadway. **Figure 8** is a photo showing the intersection split.



Figure 6: KY 1554/KY 56 Intersection



Figure 7: View from KY 1554 at KY 56 Intersection



Figure 8: View of the KY 1554 Intersection Split

c. Drainage

Flooding has not been reported as a problem in the area. The Flood Insurance Rate Maps (FIRMs) indicate that there is a flood zone over part of this section of KY 1554 with a Base Flood Elevation of around 386 feet. The FIRM Maps of the project site can be viewed in **Appendix D**.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

Currently this potential project is listed as being state funded, therefore not requiring an environmental document. No streams as defined by the U.S. Army Corps of Engineers were observed. If a permit is required then an environmental document will be necessary.

A. Air Quality

Daviess County is currently in attainment for all monitored air pollutants.

B. Archaeology

All additional right of way or permanent easement will require a Phase I archaeology survey.

C. Threatened and Endangered Species

The United States Fish and Wildlife Service (USFWS) have identified the known and potential presence of threatened and endangered species in Daviess County (Table 2). During the site visit on February 17, 2011 potential habitat was observed for the bat species. A biological assessment should be completed prior to construction to assess the potential impact to threatened and endangered species.

Table 2 – USFWS Listing of Threatened and Endangered Species in Daviess County

Group	Species	Common Name	Legal Status	Known Potential
Mammals	<i>Myotis sodalis</i>	Indiana bat	E	K
Mussels	<i>Plethobasus cooperianus</i>	orangefoot pimpleback	E	P
	<i>Plethobasus cyphus</i>	sheepnose	E	P
	<i>Pleurobema clava</i>	clubshell	E	P
	<i>Pleurobema plenum</i>	rough pigtoe	E	P
	<i>Potamilus capax</i>	fat pocketbook	E	P
	<i>Cyprogenia stegaria</i>	fanshell	E	P
	<i>Lampsilis abrupta</i>	pink mucket	E	P

D. Hazardous Materials

During the February 17, 2011 site visit no sources of potential hazardous materials were observed.

E. Historic Resources

There were several homes noted within the viewshed of the project that were 50 years old or older. A thorough assessment of local residences would be required to gauge their eligibility for listing on the National Register of Historic Places. The alternative of a potential new route would bisect a farmstead and impact several outbuildings. See **Figure 9**. The farm would need to be ruled out as historic.



Figure 9: Potentially Eligible for the National Register of Historic Places

F. Permitting

Corps permitting is not expected to be an issue on this proposed new section of KY-1554.

G. Noise

The alternative of a potential new route could require additional noise analyses since the proposed new section would bring traffic closer to some residences/noise receptors.

H. Socioeconomic

Socioeconomic impacts should not be an issue on this project.

I. Section 4(f) Resources

If either the archaeology sites or residences located nearby are ruled eligible for the National Register of Historic Places they could also be afforded protection under Section 4(f). KYTC has options to mitigate and avoid impacts to Section 4 (f) resources including a Programmatic Agreement for mitigating historic properties, using 'de minimus' guidance for minor strip takings.

J. Section 6(f) Resources

No potential Section 6(f) resources were observed on this potential project.

IV. PRELIMINARY PROJECT INFORMATION

A. Utilities

A summary of the utility contacts provided by the KYTC District Office for the project area is below.

Kenergy
JR Robey 270-689-6100

Kentucky Utilities
Terry Moore 270-383-6000

Time Warner Cable
Brent Rafferty 270-222-0861

Atmos Energy
Jim Capps 270-685-8103

ATT
Larry Crabtree 270-685-7609

KDL Communications
Jesse Chapman 812-759-7955

West Daviess County Water
270-685-5594

A search of GIS files available indicates that there is a 3-inch waterline that is on the south side of KY 1554. During a site visit to the study area it was noted that the overhead utility lines ran mostly on the north side of KY 1554. The location of utilities will need to be further verified as the project survey is completed in Phase I Design.

B. Agency Coordination

The Project Team met on April 18, 2011 to review and discuss the project and the DNA. Existing conditions information was discussed. Some alternatives were also discussed. The minutes of this meeting can be reviewed in **Appendix E**.

V. PROJECT PURPOSE AND NEED STATEMENT

A Purpose and Need Statement is the foundation for project decision-making and is needed for projects requiring NEPA documentation. Based upon the information presented in Section II of this report and discussion of the project team, the following Purpose and Need Statement was drafted for this project:

The geometrics of KY 54 currently do not meet recommended guidelines. The intersection of KY 1554 with KY 56 is at a skew angle which could affect sight distance. **The purpose of this project is to improve the safety and geometrics of KY 1554, with emphasis at the intersection of KY 56 and KY 1554.**

VI. POSSIBLE ALTERNATIVES

The following are alternatives analyzed and discussed during the development of this study.

A. Alternate #1 - No Build

The ADT is low and there have not been a significant number of collisions on this roadway. Capacity is not an issue, and currently there are no plans for future development along this corridor. A No Build alternative may be a consideration at this location.

B. Alternate #2 – New Corridor

This alternate would include a new corridor from near the Audubon Parkway to KY 56, as described in the Highway Plan. It would consist of approximately 0.55 miles of 11 ft lanes and 5 ft shoulders through farmland. There are homes noted within the view shed of the proposed corridor that may be eligible for listing on the National Register of Historic Places. The potential new route would also bisect a farmstead and impact several outbuildings. It is also possible that the farm could be determined to be historic.

The project team expressed concern that residents in this area would not be supportive of this alternative. Sketches of possible alternative locations can be viewed in *Figure 10*.

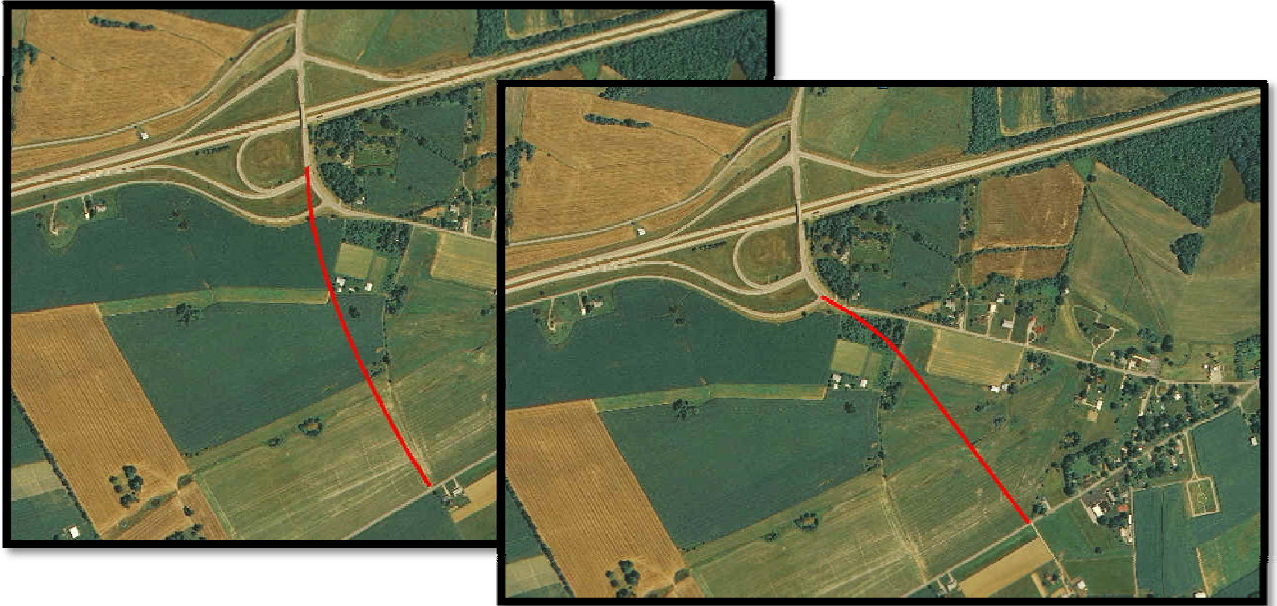


Figure 10: Alternate #2

C. Alternate #3 – Widen KY 1554

This alternative would widen the existing route (0.648 miles) from 9 ft to 11 ft and would add 5 ft shoulders. This would result in major right of way and utility impacts. There are multiple, closely spaced homes along this route that are potentially eligible for the National Register that would be impacted by this alternate.

D. Alternate #4 – Minor Improvements to the KY 1554/KY 56 Intersection

This alternate would add some signing at the fork in the intersection explaining KY 56 westbound traffic needs to take a right and will improve a pavement edge drop-off around the radii at this intersection. This alternative would provide minor, low-cost improvements to the intersection with little to no negative impacts.

E. Alternate #5 – Realignment of the KY 1554/KY 56 Intersection

Alternate #5 is the realignment of KY 1554 to come in at a T with KY 56. Although there haven't been many collisions along this route, the majority have occurred at the intersection. Drivers traveling from KY 1554 to eastbound KY 56 may have difficulty

seeing oncoming, eastbound traffic. However, this alternate would take KY 1554 close to the house on the corner; potentially disturbing the view shed of a home that may be eligible for the National Historic Register. A sketch of the possible location of the realignment can be seen in **Figure 11**.

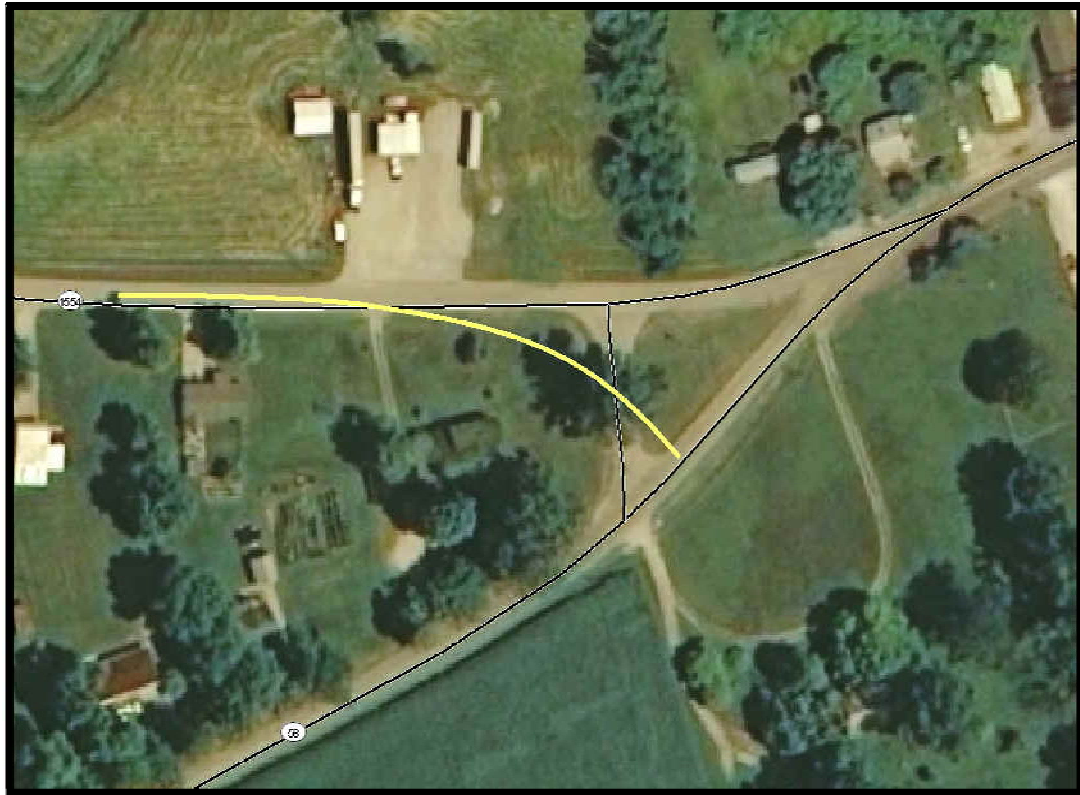


Figure 11: Alternate #5

VII. SUMMARY

This study is a Data Needs Analysis (DNA) of a project located on KY 54 in Daviess County, Item Number 2-8632.00, from KY 56 at Sorgho (MP 0.000) to Curdsville-Delaware Road near the Audubon Parkway Interchange (MP 0.648). Through analysis of the existing roadway geometrics, crash data, site visits, and discussion with the project team, needs were identified within the project limits. The following was identified as a project purpose and need statement:

- The KY 1554/KY 56 intersection geometry is undesirable for some traffic maneuvers. The purpose of this project is to improve the safety and geometrics of KY 1554, with emphasis at the intersection of KY 56 and KY 1554.

Considering this route is well under capacity, and has a lack of significant crash history, the project team did not recommend proceeding with a new corridor or widening the existing corridor, Alternatives #2 and #3.

The alternatives that the project team recommended to be considered in future phases of project development include Alternative #1 – No Build, Alternative #4 – Minor Intersection Improvements, and Alternative #5 – Intersection Realignment. Alternative #4 would be a very low-cost improvement which could be completed with maintenance funds. The following is the preliminary cost estimated for Alternate #5:

<u>Phase</u>	<u>Estimate</u>
Design	\$250,000
Right of Way	\$250,000
Utilities	\$100,000
Construction	<u>\$680,000</u>
Total	\$1,280,000

This is a 2011 planning level cost estimate. The construction estimate was based on cost per unit. The current Highway Plan allocates \$660,000 in SB2 funds for design of this project. This amount has been authorized. If Alternative #5 moves forward, an additional \$600,000 to \$700,000 would need to be included in future Highway Plans to fund all phases of the project.